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Clinical significance of ocular changes in leukemia

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The ocular involvement in leukemia is due to vascular abnormalities affecting the retina, direct infiltration into various tissues of the eye and neuro-ophthalmic signs. 288 patients of all types of leukemia, aged between 6 weeks and 78 years of both genders, were examined for ocular involvement in the oncology wards, within two days of diagnosis before starting chemotherapy. Ocular lesions were seen in 102 patients (35.4%) retinal vascular changes in 31.6%, infiltration of ocular tissues in 1.7% and neuro-ophthalmic signs in 2.1% cases. Only 10% out of 35% of patients had eye symptoms at the time of ocular examination. In acute leukemia patients, a higher white cell count was significantly associated with occurrence of intra-retinal hemorrhages (IRH) ($p=0.05$) and white centered hemorrhages (WCH) ($p=0.002$), while low platelet count was significantly associated with the presence of intra-retinal hemorrhages only ($p=0.01$). There was no correlation of Cotton Wool Spots (CWS) with any of the hematological parameters. Macular Hemorrhage (MH) was found to be significantly associated with the risk of incident of ICH ($p<0.05$) within the first 30 days after diagnosis. However, no association was found between the incidence of ICH and the presence of IRH, WCH or CWS. There was no association between the presence of any retinal lesions and complete remission induction rate. The median overall survival of those with IRH was significantly lower than those without such lesions ($p=0.002$). No association was found between the presence of any of the retinal lesions and hematological parameters in chronic leukemia patients. High white blood cell count should be considered as important as low platelet count in the pathogenesis of retinal hemorrhages. Patients with MH should be monitored intensively for the development of ICH within first 30 days after diagnosis. Presence of IRH may be considered as an indicator of poor survival prognosis. Therefore, eye examination should be included as a part of the evaluation protocol in leukemia patients, irrespective of presence or absence of eye symptoms.

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